QIPE IAP69 MAR 22 2006 PATENT & TRADEMARK OFFICE

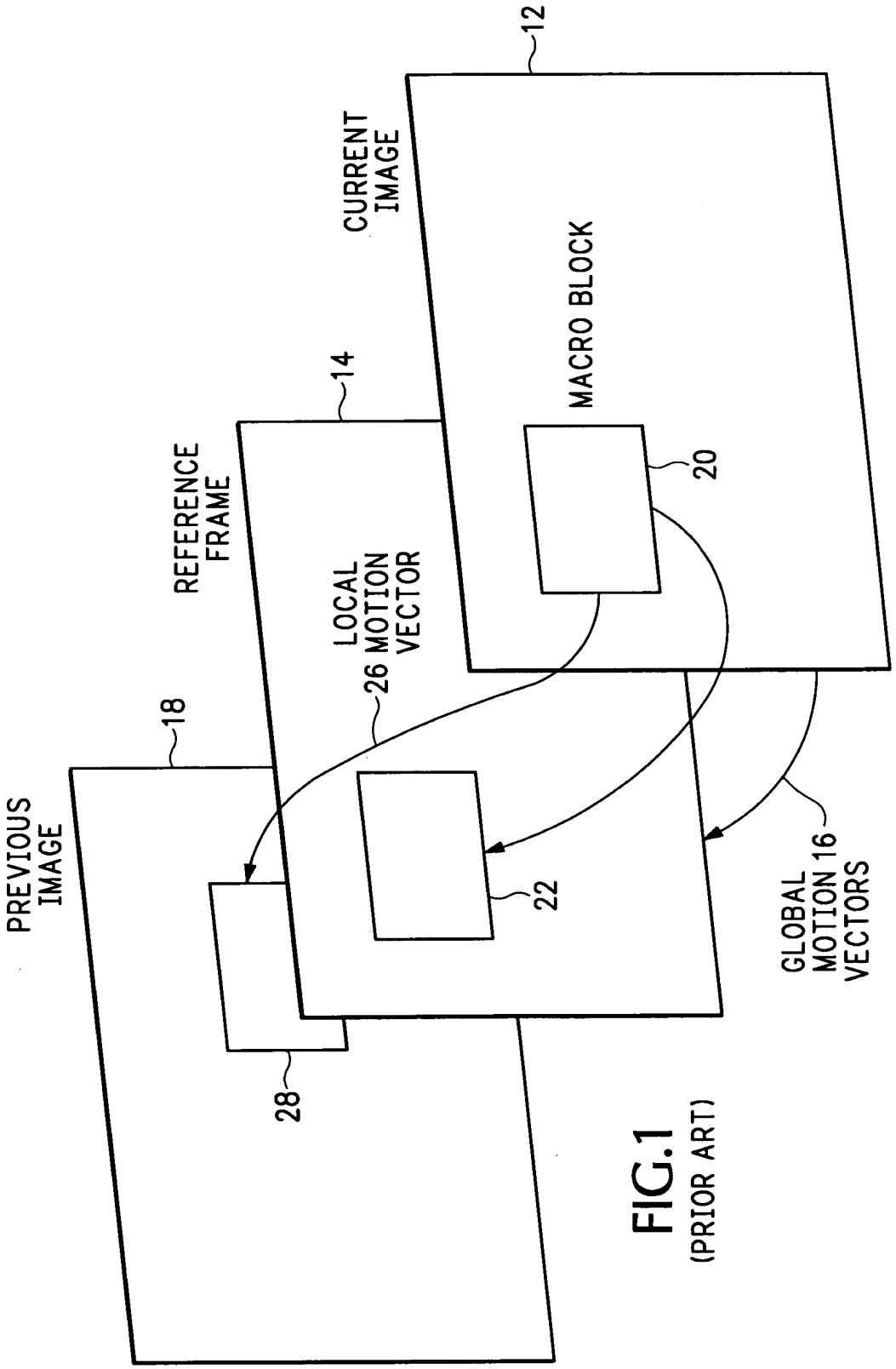

FIG.1
(PRIOR ART)

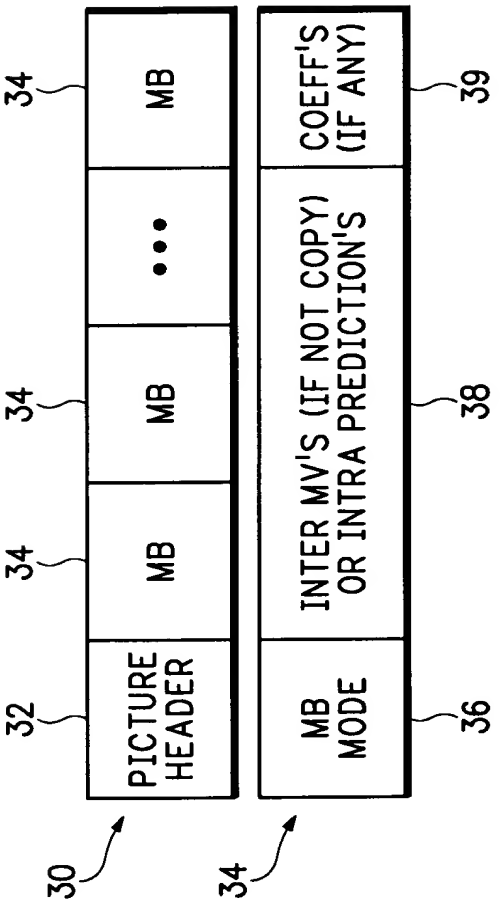

FIG.2
(PRIOR ART)

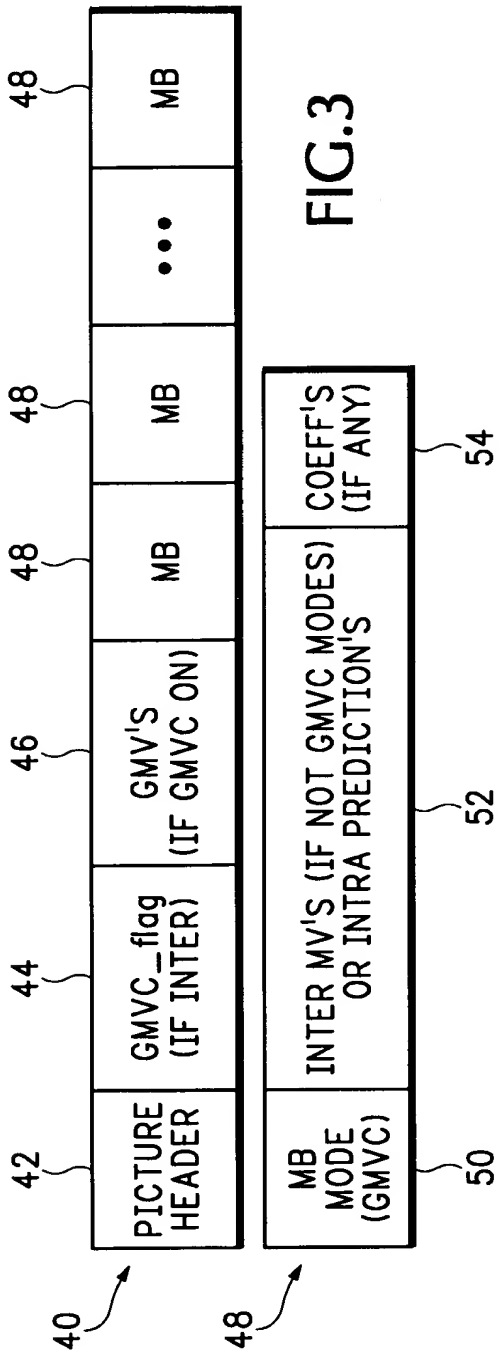

FIG.3

TABLE 1
CODEWORD NUMBER OF GMVC_flag

CODE NUMBER	GMVC_flag	COMMENT
0	0	GMVC OFF
1	1	GMVC ON

FIG.4

TABLE 2
CODEWORD NUMBER OF MB MODES

CODE NUMBER	GMVC OFF	GMVC ON	COMMENT
X	COPY	GMVC COPY	GMVC MODES
0	16X16	GMVC_16	
1	16X8	16X16	NON-GMVC MODES
2	8X16	16X8	
3	8X8	8X16	
4	8X4	8X8	
5	4X8	8X4	
6	4X4	4X8	
7	INTRA 4X4	4X4	
8	0,0,0	INTRA 4X4	
•••	•••	•••	

FIG.5

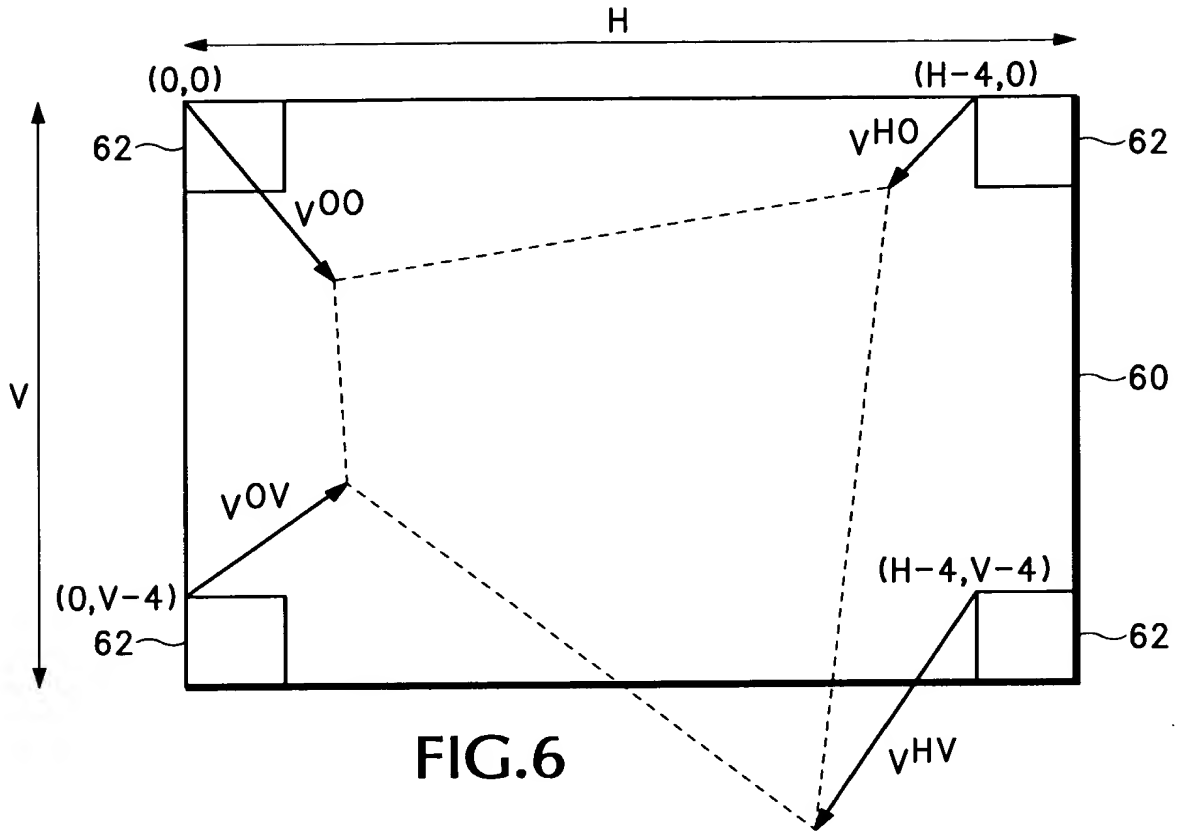

FIG.6

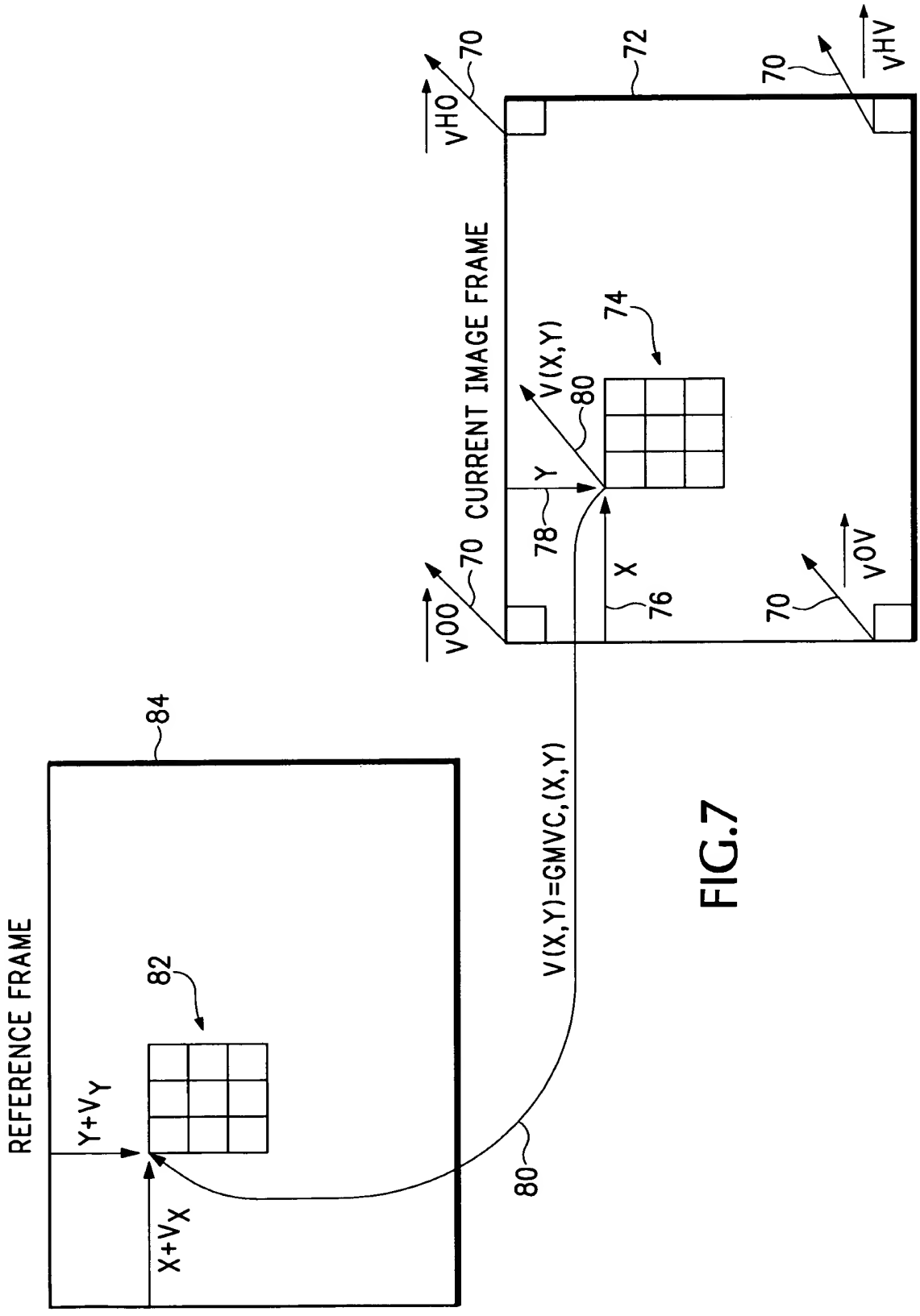
CURRENT IMAGE FRAME
REFERENCE FRAME
V(X,Y)
V(X,Y)=GMVC,(X,Y)
Y
X
Y+VY
X+VX
VHO
VHV
V00
V0V
70
72
74
76
78
80
82
84

FIG.7

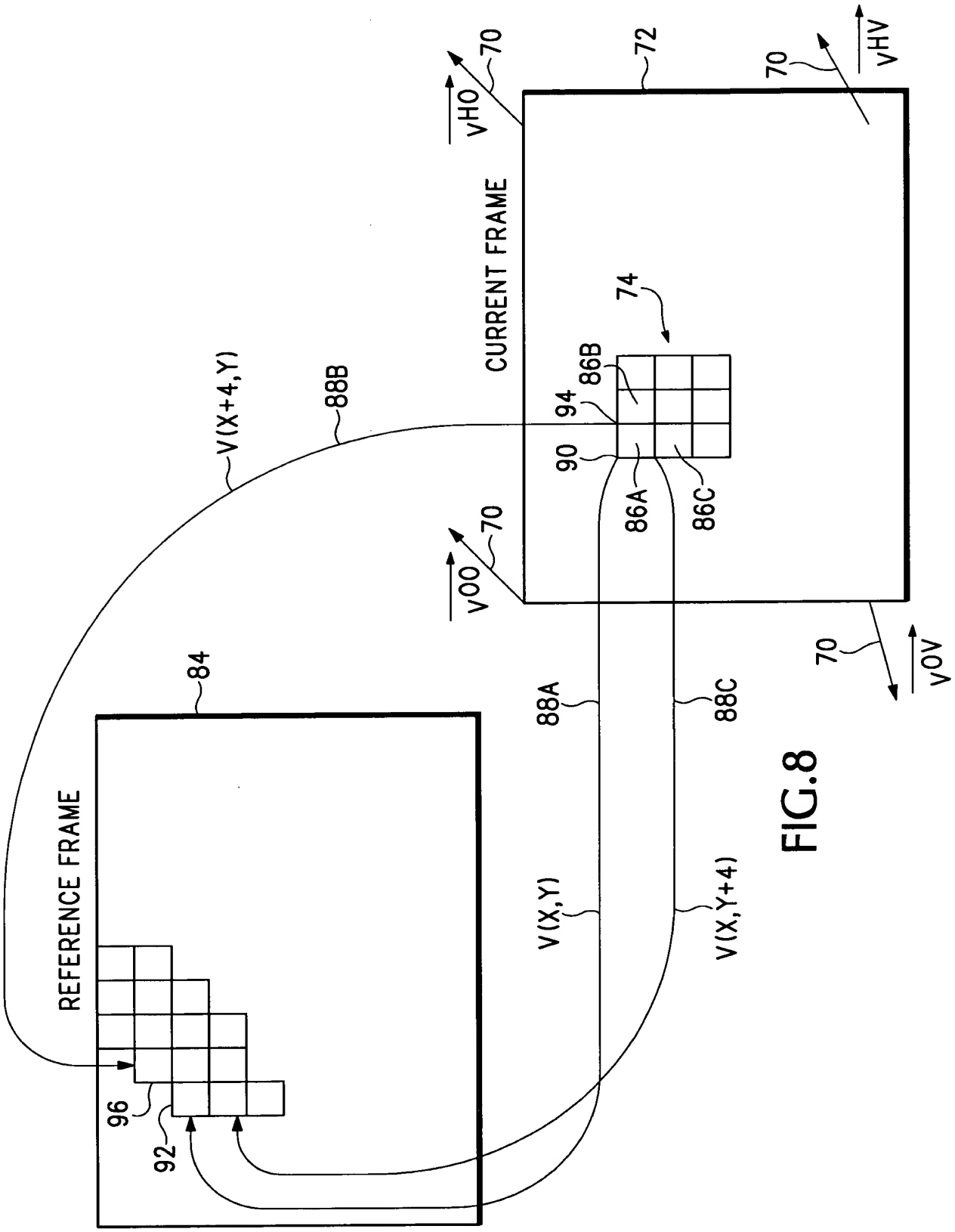
CURRENT FRAME
REFERENCE FRAME
V(X+4,Y)
V(X,Y)
V(X,Y+4)
V00
VHO
VHV
VOV
70
72
74
84
88A
88B
88C
86A
86B
86C
90
92
94
96

FIG.8

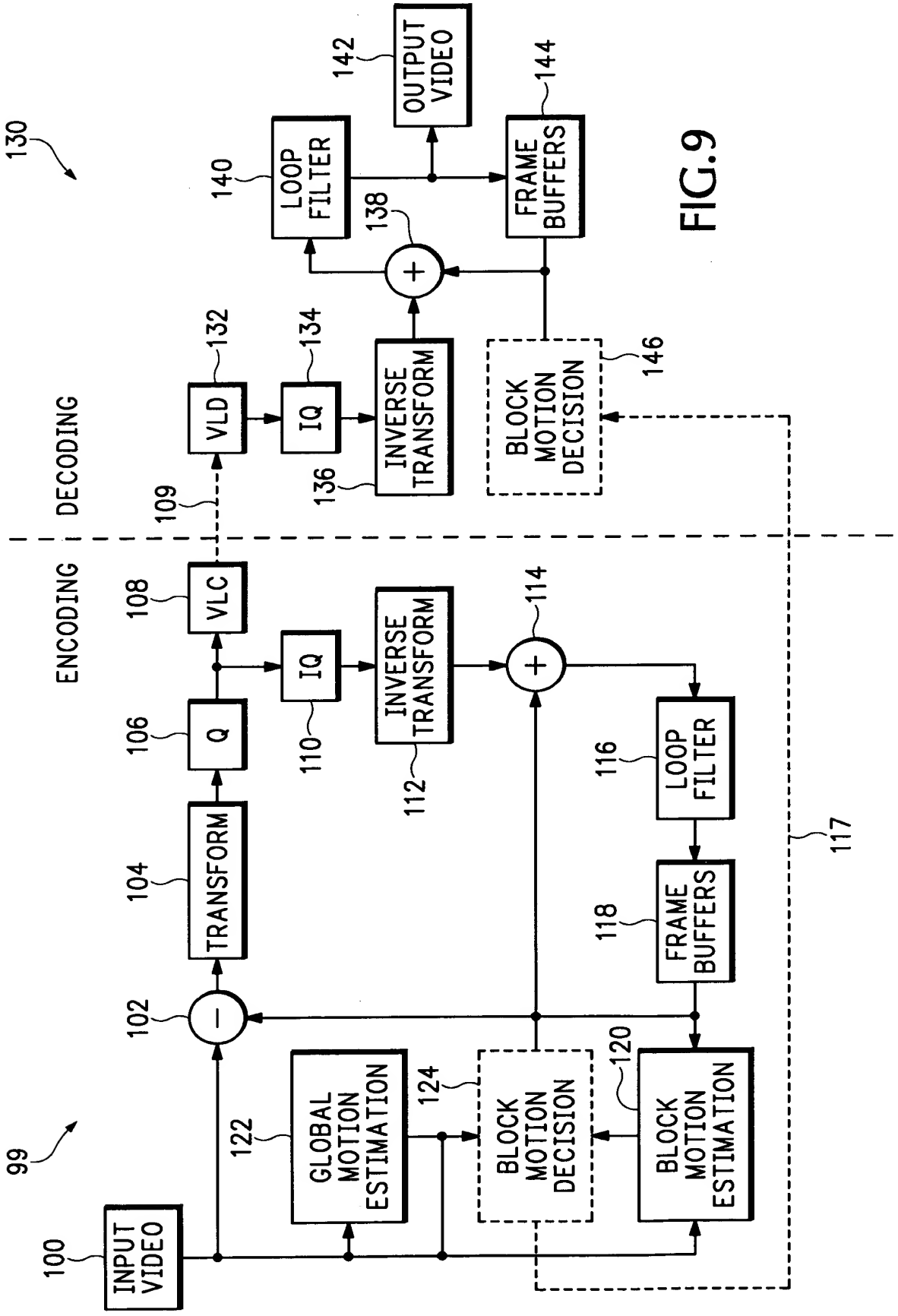
130
142
OUTPUT VIDEO
144
FRAME BUFFERS
140
LOOP FILTER
138
DECODING
132
VLD
134
IQ
INVERSE TRANSFORM
136
BLOCK MOTION DECISION
146
109
ENCODING
108
VLC
IQ
INVERSE TRANSFORM
114
106
Q
110
112
116
LOOP FILTER
104
TRANSFORM
118
FRAME BUFFERS
117
102
99
GLOBAL MOTION ESTIMATION
122
124
BLOCK MOTION DECISION
120
BLOCK MOTION ESTIMATION
100
INPUT VIDEO

FIG.9

SEQUENCES	NUMBER OF FRAMES	QP	PSNR(Y) (TML8)	bitrate (TML8)	PSNR(Y) (GMVC)	bitrate (GMVC)	GMVC AVERAGE bitsavings (avsnr)	GMVC AVERAGE dB GAIN (avsnr)
container_qcif	100	16	36.012	26841	36.072	26973	0.41%	0.017
	100	20	33.315	14686	33.374	14982		
	100	24	39.496	8872	30.625	8992		
	100	28	27.72	5501	27.89	5546		
news_qcif	100	16	36.748	50387	36.771	50306	0.32%	0.019
	100	20	33.773	30616	33.807	30610		
	100	24	30.807	18393	30.878	18571		
	100	28	27.912	11138	27.92	11217		
foreman_qcif	100	16	36.03	77341	36.015	76953	3.75%	0.197
	100	20	33.312	47049	33.254	45815		
	100	24	30.759	29654	30.691	27729		
	100	28	28.123	19002	27.987	16829		
silent_qcif	150	16	35.799	62703	35.803	62584	1.54%	0.075
	150	20	33.067	36789	33.105	36700		
	150	24	30.446	21462	30.528	21341		
	150	28	27.94	12389	28.027	12325		

TO FIG.10B

FIG.10A

FROM FIG.10A

paris_cif	150	16	35.607	350219	35.627	348976	0.73%	0.037
	150	20	32.541	202010	32.576	201485		
	150	24	29.636	112599	29.65	112559		
	150	28	26.719	63113	26.754	62710		
mobile_cif	300	16	34.009	1658660	33.986	1657004	0.64%	0.028
	300	20	30.738	838637	30.684	833798		
	300	24	27.817	423358	27.672	406809		
	300	28	25.093	252598	24.839	226740		
tempete_cif	260	16	34.95	1275478	34.945	1276031	1.29%	0.053
	260	20	31.931	625722	31.887	619544		
	260	24	29.217	313318	29.134	301817		
	260	28	26.557	176451	26.472	162093		
coast_cif	300	16	34.36	1289113	34.341	1265484	8.23%	0.28
	300	20	31.491	649562	31.457	616242		
	300	24	28.874	307248	28.854	270744		
	300	28	26.548	144230	26.606	116146		
AVERAGE							2.11%	0.08825

COMPARISON OF TML-8 AND THE PROPOSED GMVC

FIG.10B